



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,435	01/20/2006	Tetsuya Hayashi	529.45793X00	2189
20457	7590	10/01/2008	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873				BOR, HELENE CATHERINE
ART UNIT		PAPER NUMBER		
3768				
MAIL DATE		DELIVERY MODE		
10/01/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/565,435	HAYASHI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	HELENE BOR	3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 31 March 2008.

2a) This action is **FINAL**.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-20 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 07/16/2008.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

## DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Objections***

2. Claim 8 & 12 are objected to because of the following informalities: The claims state, “the variance” and lack antecedent basis.

### ***Claim Rejections - 35 USC § 103***

3. Claim 1-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Shiki et al. (US Patent No. 7,044,913), in view of Hossack et al. (US Patent No. 6,116,244) and in view of Alexander et al. (US Patent No. 6,239,796 B1).

**Claim 1-3, 5-6, 10 & 17:** Shiki teaches an ultrasound apparatus forming a tomogram of an examinee by transmitting/receiving an ultrasound wave via an ultrasound probe (Col. 12, Line 63-67). Shiki teaches a color Doppler image forming means (Col. 12, Line 56-62). Shiki teaches image processing means for both the tomogram and the Doppler image (Figure 1, Element 4 & 5) and a display (Figure 1, Element 6) to display the images (Col. 13, Line 31-43). Shiki teaches selecting one luminance/hue color bar Shiki fails to teach a degree of transparency of the color Doppler image. However, Hossack teaches controlling a degree of the transparency [opacity] of the color Doppler image based on blood flow information or variance of a blood flow (Col. 2, Line 25-35 & Col. 3, Line 33-43 & Line 25-31) in order to emphasize the clinical areas of interest in the display (Col. 2, Line 33-35). It would have been obvious to one of ordinary skill in the art to modify the displaying means of Shiki to include the transparency control means of

Hossack in order to emphasize the clinical areas of interest in the display (Col. 2, Line 33-35). Shiki teaches displaying various color bars (Col. 20, Line 23-25) or displaying between one and two color bars (color bar as shown in Figure 11(a) and color bars as shown in Figure 30(a)). Shiki fails to teach the selecting means for the display. However, Alexander teaches either only the selected dialog box is displayed or the displaying the original with the selected dialog boxes (Col. 14, Line 43-49) to allow immediate control capabilities of the user to the computer (Col. 14, Line 15-18). It would have been obvious to one of ordinary skill in the art to modify the system of Shiki and Hossack to include the selecting means as taught by Alexander in order to allow immediate control capabilities of the user to the computer (Col. 14, Line 15-18).

**Claim 7, 8 & 15:** Shiki teaches displaying blood flow (Col. 10, Line 25-33). Shiki fails to teach controlling a degree of transparency of the color Doppler image. However, Hossack teaches wherein the transparency in a color Doppler image is reduced with an increase in the variance of the blood flow (Col. 1, Line 64 – Col. 2, Line 4). Also Hossack teaches an opaque image when the variance is maximum, a transparent image when the variance is null and a semi-transparent image when the variance is in between (Col. 4, Line 14-17 & Col. 5, Line 5-19) in order to emphasize the clinical areas of interest in the display (Col. 2, Line 33-35). Shiki and Hossack do not teach the exact color assignments as written in Claim 15, however, it would have been an obvious matter of design choice to change which color corresponds to which velocity or variance value, since the applicant has not disclosed that the color differences solves any stated

problem or is for any particular purpose and it appears that the invention would perform equally well with different colors schemes.

**Claim 9:** Shiki teaches displaying color bars (Col. 20, Line 25-31). Shiki fails to teach transparency in the color Doppler image. However, Hossack teaches transparency [opacity] in the color Doppler image (Col. 2, Line 25-35 & Col. 3, Line 33-43 & Line 25-31) in order to emphasize the clinical areas of interest in the display (Col. 2, Line 33-35).

**Claim 11 & 13:** Shiki teaches controlling a luminance/hue of the color Doppler image (Col. 20, Line 25-63) and producing a three-dimensional color Doppler image (Col. 8, Line 1-9).

**Claim 12 & 18-20:** Shiki teaches arranging a speed/reflection intensity data of the Doppler signal in each of the three-dimensional voxels (Col. 5, Line 32-58). Shiki teaches means for deciding a luminance/hue of each of the three-dimensional voxels based on the speed (Col. 8, Line 50-56). Shiki fails to teach the transparency. However, Hossack teaches means for deciding transparency of each of the three-dimensional voxels based on variance (Col. 3, Line 9-31) in order to emphasize the clinical areas of interest in the display (Col. 2, Line 33-35).

**Claim 14:** Shiki teaches a phase comparator (Col. 12, Line 47-51), a MTI filter (Col. 32, Line 23-25), an autocorrelation calculation means (Figure 5 (b)), a digital scan converter (Figure 19 (a, b & c)), and a color encoder (Col. 8, Line 50-56)

**Claim 16:** Shiki teach wherein the image processing means comprises storage means for storing data of a plurality of color Doppler images (Col. 23, Line 20-23).

***Response to Arguments***

4. Applicant's corrections, see Page 10, filed 10/01/2007, with respect to the claim Objections have been fully considered and are not fully persuasive. Upon review the Examiner erred in the Claim Objection to Claim 12. The Claim already had antecedent basis the Examiner regrets this error. Claim 7 and 9 were corrected appropriately and the Claim Objection to Claim 7 & 9 is withdrawn. However, Claim 8 was not corrected correctly. On the second line, "the variance" should be changed to "a variance" and the edit to the fifth line should be reverted.

5. Applicant's arguments with respect to claim 1-20 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Bor whose telephone number is 571-272-2947.

The examiner can normally be reached on M-T 8:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. B./  
Examiner, Art Unit 3768

/Eric F Winakur/  
Primary Examiner, Art Unit 3768